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ABSTRACT

Mothers' imitation of their infants during the first 3 days of life is examined in this study. Twenty-four newborn infants (12 males, 12 females) and their mothers participated in the study. On each of the first 3 days following delivery, mother-infant pairs were videotaped in a non-feeding interaction for approximately 5 minutes while the infants were in a predominantly alert state. All videotapes were coded by two independent observers as to the occurrence of three types of maternal imitation: vocal, gestural and visual (i.e., following the infant's gaze). In addition, separate codings were performed to measure infant visual regard towards the mother's face. Results indicated that the present sample of mothers clearly imitated their newborn infants. For example, on average, mothers exhibited 7.79 total imitative acts across the 3 days, with all but one mother imitating their infants during this period of time. Overall, 40% of the observed imitation was gestural, 40% was visual, and 20% was vocal. While on the first day a significant negative relationship was observed between infant visual regard and maternal visual imitation, on the third day analysis revealed infant visual regard to be positively and significantly related to maternal gestural imitation. No significant correlations were observed between infant visual regard and maternal imitation on the second day. These findings suggest that mother-infant interaction is an excellent context for the occurrence of maternal imitation, and that this imitation plays an important role in the interaction process. (Author/MP)

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Maternal Imitation of Their Newborn Infants: Momma See, Momma Do

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Maternal Imitation of Their Newborn Infants: Momma See, Momma Do

Although great interest has recently been demonstrated in the imitation process during early infancy, researchers have focused almost exclusively upon infant imitation; as a result, little information has been provided regarding the infant's role as a model. In one of the few studies addressing this issue, Pawlby (1977) reported a longitudinal investigation of imitation as it occurred between mothers and their 17-43 week-old infants. According to Pawlby, mothers in her study frequently imitated their infants, and this maternal imitation took place in a variety of modalities (e.g., vocal, gestural). Maternal imitation of infants younger than those utilized by Pawlby (1977) has also been reported; for example, Trevarthen (1974) has described such imitation as occurring in the interactions of mothers and their 2-month-old infants. Further, Moss (1967) reported that mothers exhibited some imitation of their infants as early as three weeks of age.

Given findings such as those provided by Pawlby (1977), Trevarthen (1974) and Moss (1967), a documentation of maternal imitation during earliest mother-infant interactions would seem warranted. One of the purposes of the present study, then, was to examine the frequency with which mothers imitated their infants across the first three days of life. In addition, due to Pawlby's observations regarding the various modalities in which maternal imitation occurred, the present research noted the types of imitation exhibited by mothers during interactions with their newborn infants. Finally, it was of interest whether, given the occurrence of maternal imitation, this imitation would be related to any infant behaviors. While this issue has not been addressed during a naturalistic context, Field (1977), in an experimental manipulation of maternal imitation of 3½-month-old infants, reported that this imitation resulted in increased infant gazing at the mothers. Therefore,

the present study measured newborns' visual responsiveness to their mothers, so that the relationship between this responsiveness and maternal imitation could be evaluated in naturally-occurring mother-infant interaction.

24 newborn infants (12 males, 12 females) and their mothers comprised the sample for this research; all mother-infant pairs had experienced an uncomplicated vaginal delivery and a normal post-partum course as determined by the medical staff. For the experimental procedure, on each of the first three days following delivery mother-infant pairs were videotaped in a non-feeding interaction for approximately five minutes while the infants were in a predominantly alert state.

All videotapes were coded by two independent observers as to the occurrence of three types of maternal imitation: vocal, gestural and "visual" (e.g., following the infant's gaze). Also, separate codings were performed for measuring infant visual regard towards the mother's face. Interobserver reliability for the maternal imitation measures exceeded .90 for all observations; in addition, reliability measures for infant visual regard averaged .79.

In considering the maternal imitation data, it was clear that this sample of mothers imitated their newborn infants. For example, on the average, mothers exhibited 7.79 total imitative acts across the three days, with all but one mother (94%) imitating their infants during this period of time. In addition, although amounts of maternal imitation did not significantly increase across days, the daily percentage of mothers who imitated their infants increased consistently across observations. With regard to types of imitation mothers exhibited, overall 40% of the observed imitation was gestural, 40% was visual, and 20% was vocal.

In order to assess the relationships among types of imitation and infant looking at mother, Spearman correlational analyses were performed, using the amounts of maternal gestural, vocal and visual imitation and infant visual regard observed on each of the three days as variables. These analyses, which are summarized in Tables 1 and 2, revealed several intriguing findings, one of which involved the relationship among the three types of imitation. As can be seen in Table 1, on the first day of observation the three types of maternal imitation were unrelated. However, by the second and continuing on the third day, a positive relationship was observed between vocal and gestural imitation, indicating that mothers who vocally imitated their newborns also tended to mimic their infants' gestures. Throughout the three days, visual imitation occurred independently of the other two imitation types.

Also with respect to types of imitation, the Spearman analyses revealed that some consistency existed in these types across observations, at least with regard to gestural and visual imitation. As the first table indicates, for each of these imitation types there was a significant positive correlation from the first to the second day, and from the second to the third day. In contrast, no significant relationships emerged among amounts of vocal imitation exhibited on the three days.

Finally, the analyses revealed interesting information regarding the relationships between types of maternal imitation and infant visual regard. As seen in Table 2, on the first day a significant negative relationship was observed between infant visual regard and maternal visual imitation; thus, at this time, this type of maternal imitation was associated with decreased infant looking at mother. On the second day, no significant correlations between maternal imitation and infant visual regard were observed. However, as demonstrated in Table 2, on the third day analyses revealed infant visual

regard to be positively and significantly related to maternal gestural imitation. Therefore, at this time, increased infant looking at mothers was associated with increased maternal gestural imitation.

The findings of the present research are important in several respects. First, these data demonstrate that infants are exposed to imitative behaviors from their earliest social interactions. While the ways in which these imitative behaviors influence the infant are not yet clear, it seems reasonable to propose that maternal imitation may enhance the occurrence of infant imitation. A similar suggestion was earlier offered by Pawlby (1977), who stated that infant imitation may very well be rooted in mothers' "readiness" to imitate their infants.

Several important points may also be made regarding the relationships exhibited between maternal imitation and infant visual regard. First, the positive association between maternal gestural imitation and infant visual regard on the third day corroborates Field's (1977) findings with older infants. Further, this finding, together with the negative correlation on the first day between infant visual regard and maternal visual imitation, suggest that the type of imitation exhibited by mothers may very well depend upon the infant's visual attention to the mothers. Such an interpretation is very consistent with previous accounts which emphasize the young infant as an active and influential partner in social interactions (e.g., Bell, 1974).

However, a more important point needs to be made regarding the relationships between maternal imitation and infant visual behaviors. Specifically, these relationships indicate that these early imitative episodes within the context of mother-infant interaction have important functions within this interaction. With regard to their functions for the infant, these imitative

episodes provide an opportunity to regulate the mother-infant relationship. McCall (1975), in discussing this issue with respect to older infants, has stated that being imitated facilitates infants' awareness of their ability to control their environment. The present study demonstrates that the chance to exert such control is present from a mother and infant's earliest encounters.

In addition, these early imitative behaviors appear functional for the mother as well, in that they allow her to maintain interaction with her infant. For example, frequently in the present study, mothers, subsequent to gesturally and visually imitating their infants, would vocalize to their infants (e.g., "Are you sticking out your tongue at mommy?"), thereby allowing them to not only maintain interaction, but to elaborate upon it. In a related study by Noble, Self and Francis (1981), the relationships between these imitative acts and maternal vocalizations to their infants have been documented.

Finally, as well as serving differential functions for mothers and infants, the imitative episodes observed in the present study are suggested to play important roles in the interaction process itself. One role appears to be the facilitation of this process; certainly it can be argued that the maintenance and elaboration of the interaction as described above facilitates the mother-infant relationship. In considering a second role, the very nature of imitation (e.g., one partner must follow the other's behavior within a relatively limited period of time) ensures its importance in the temporal patterning of the interaction process. Several authors (e.g., Pawlby, 1977; Schaffer, 1977) have commented upon this importance, noting that imitation makes significant contributions to turn-taking between mothers and infants. From the present study, it may be concluded that the foundations for later turn-taking are being

established through these early, relatively simplistic, imitation episodes in which the mother repeats the infant's behavior. In order to clarify this issue further, future research is needed which developmentally examines the role of imitation, both maternal and infant, within the context of mother-infant interaction, beginning with earliest interactions and continuing across the first months of life.

Other significant findings of the present research involve the types of imitation this sample of mothers exhibited. Particularly interesting was the consistency observed across days in gestural and visual imitation. This consistency implies that mothers tend to imitate their infants in specific modalities; in addition, it may be that such a tendency has implications for various aspects of infant development. To illustrate, several authors (e.g., Brunner, 1977; Collis & Schaffer, 1975) have noted the possible effects of maternal visual imitation (or visual "co-orientation") upon infant communication development. Further, in a doctorial dissertation by Francis (1980), these effects have been substantiated with a sample of mothers and their 2-4 month-old infants.

Also important to a discussion of imitation types are the findings regarding the relationships among these types. For example, no relationship was observed among these types on the first day of observation; however, on the second and third days, mothers who gesturally imitated their infants were also likely to mimic their infants' vocalizations. These results suggest that, during earliest imitative interactions, a change may be observed, with mothers imitating their infants in increasing modalities. Such findings corroborate those of Pawlby (1977) with older infants, as this researcher reported that mothers across time could be observed to imitate their infants in increasing numbers of activities.

In conclusion, the present research examined the occurrence of maternal imitation across the infant's first three days of life. Findings indicated that the present sample of mothers imitated their infants during this time, and further, the number of mothers who imitated their infants increased with infant age. In addition, this study demonstrated that during earliest interactions, mothers imitate within a variety of modalities. Finally, the present research offers evidence that relationships exist from first encounters between maternal imitation and infant visual behaviors. Together, these findings suggest that mother-infant interaction is an excellent context for the occurrence of maternal imitation, and that this imitation plays an important role in the interaction process itself.

Table 1

Correlations Among Imitation Types Across Days

	Gestural-Day 2	Gestural-Day 3	Vocal-Day 1	Vocal-Day 2	Vocal-Day 3	Visual-Day 1	Visual-Day 2	Visual-Day 3
Gestural-Day 1	.4751**			.5828***				
Gestural-Day 2		.4516*		.4449*	.4407*			
Gestural-Day 3				.3859*	.4340*			
Vocal-Day 1								
Vocal-Day 2								
Vocal-Day 3								
Visual-Day 1							.5419**	
Visual-Day 2								.4192*
Visual-Day 3								

*p < .05
**p < .01
***p < .001

Table 2

Correlations Among Imitation Types and Infant Visual Regard Across Days

	Infant Visual Regard-Day 1	Infant Visual Regard-Day 2	Infant Visual Regard-Day 3
Gestural-Day 1			
Gestural-Day 2			
Gestural-Day 3			.3873*
Vocal-Day 1			
Vocal-Day 2	.3644*		
Vocal-Day 3			
Visual-Day 1	-.3423*		
Visual-Day 2			
Visual-Day 3	-.3563*		

*p $<$ .05

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